

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method of enhancing the phosphorus nutrition of a plant, comprising the step of growing said plant in a medium comprising phytate, wherein the plant ectopically expresses in its roots an isolated nucleic acid molecule encoding a phytase polypeptide and said phytase polypeptide is secreted from the roots, wherein said phytase polypeptide comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 4, and wherein said plant has enhanced phosphorus nutrition relative to an isogenic non-transformed plant.
2. (Previously amended) The method according to claim 1 wherein the secretion of said phytase from the roots is achieved by ectopically expressing the phytase as a fusion protein with a secretory signal peptide.
3. (Original) The method according to claim 2 wherein the secretory signal peptide is selected from the group consisting of the carrot extensin signal peptide and the lupin acid phosphatase signal peptide.
4. (Original) The method according to any one of claims 1 to 3 wherein the phytase polypeptide is from *Aspergillus niger*.
5. (Withdrawn) The method according to any one of claims 1 to 3 wherein the phytase polypeptide has an amino acid sequence having at least 93% identity to SEQ ID NO: 2.

6. (Currently amended) The method according to claim 1 ~~claim 5~~ wherein the phytase polypeptide comprises an amino acid sequence ~~amino acids having a sequence~~ selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO: 4.
7. (Currently amended) The method according to claim 1 ~~claim 5~~ wherein the phytase polypeptide is encoded by a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO: 3, and a degenerate nucleotide sequence thereto.
8. (Currently amended) The method according to claim 1 ~~claim 5~~ wherein the phytase polypeptide is encoded by a nucleotide sequence contained within the plasmid assigned AGAL Accession No. NM99/06795.
9. (Previously amended) A method of enhancing the phosphorus nutrition of a plant, comprising the step of growing said plant in a medium comprising phytate, wherein said plant ectopically expresses in its roots an isolated nucleic acid molecule encoding a fusion polypeptide between a secretory signal peptide and a phytase polypeptide and said fusion polypeptide is secreted from the roots, wherein said isolated nucleic acid comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 11, the phytase-encoding nucleotide sequence contained in the plasmid assigned AGAL Accession No. NM99/06795, and degenerate nucleotide sequences thereto, and wherein said plant has enhanced phosphorus nutrition relative to an isogenic non-transformed plant.
10. (Previously amended) The method according to claim 9 wherein the fusion polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 10 and SEQ ID NO: 12.

11. (Withdrawn) The method according to claim 1, further comprising the step of modifying the chemistry of the medium around the roots using an organic acid.
12. (Withdrawn) The method according to claim 11 wherein the organic acid is citric acid.
13. (Withdrawn) The method according to claim 11 or 12 wherein the secretion of phytase from the roots is achieved by ectopically expressing the phytase as a fusion protein with a secretory signal peptide.
14. (Withdrawn) The method according to claim 13 wherein the secretory signal peptide is selected from the group consisting of the carrot extensin signal peptide and the lupin acid phosphatase signal peptide.
15. (Withdrawn) The method according to any one of claims 11, 12 and 14 wherein the phytase polypeptide is from *Aspergillus niger*.
16. (Withdrawn) The method according to claim 11 or 12 wherein the phytase polypeptide has an amino acid sequence having at least 93% identity to SEQ ID NO: 2.
17. (Withdrawn) The method according to claim 16 wherein the phytase polypeptide comprises amino acids having a sequence selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO: 4.
18. (Withdrawn) The method according to claim 17 wherein the phytase polypeptide is encoded by a nucleotide sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 3, and a degenerate nucleotide sequence thereto.

19. (Withdrawn) The method according to claim 17 wherein the phytase polypeptide is encoded by a nucleotide sequence contained within the plasmid assigned AGAL Accession No. NM99/06795.
20. (Withdrawn) The method accordingly to claim 9, further comprising the step of modifying the chemistry of the medium around the roots using an organic acid.
21. (Withdrawn) The method according to claim 20 wherein the organic acid is citric acid.
22. (Withdrawn) The method according to claim 20 or 21 wherein the fusion polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 10 and SEQ ID NO: 12.
23. (Withdrawn) The method according to any one of claims 11, 12, 20, and 21 wherein the growth of said plant is enhanced and/or the phosphorus content of said plant is increased, relative to an isogenic non-transformed plant.
24. (Withdrawn) The method according to any one of claims 11, 12, 20, and 21 wherein the biomass produced by said plant is enhanced, relative to an isogenic non-transformed plant.
25. (Withdrawn) The method according to any one of claims 11, 12, 20, and 21 wherein the rate of hypocotyl production or the rate of epicotyl production of said plant is enhanced, relative to an isogenic non-transformed plant.
26. (Currently amended) A transformed plant growing in a medium comprising phytate, wherein said plant ectopically expresses in its roots an isolated nucleic acid molecule encoding a phytase polypeptide and said phytase polypeptide is secreted from the roots, wherein said phytase polypeptide comprises an amino

acid sequence having at least 95% identity to SEQ ID NO: 4, and wherein said plant has enhanced phosphorus nutrition relative to an isogenic non-transformed plant growing in said medium.

27. (Previously amended) A progeny plant of the transformed plant of claim 26, wherein said progeny plant is growing in a medium comprising phytate, and wherein said progeny plant ectopically expresses in its roots said isolated nucleic acid molecule and said phytase polypeptide is secreted from the roots.
28. (Previously amended) A transformed plant growing in a medium comprising phytate, wherein said plant ectopically expresses in its roots an isolated nucleic acid molecule encoding a fusion polypeptide between a secretory signal peptide and a phytase polypeptide and said fusion polypeptide is secreted from the roots, wherein said isolated nucleic acid comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 11, the phytase-encoding nucleotide sequence contained in the plasmid assigned AGAL Accession No. NM99/06795, and degenerate nucleotide sequences thereto, and wherein said plant has enhanced phosphorus nutrition relative to an isogenic non-transformed plant growing in said medium.
29. (Previously amended) A progeny plant of the transformed plant of claim 28 wherein said progeny plant is growing in a medium comprising phytate, and wherein said progeny plant ectopically expresses in its roots said isolated nucleic acid molecule and said phytase polypeptide is secreted from said roots.
30. (Previously amended) The transformed plant of claim 26 or 28 wherein said plant exhibits an increased biomass relative to an isogenic plant that does not ectopically express the phytase polypeptide.

31. (Previously amended) The progeny plant of claim 27 or 29 wherein said progeny plant exhibits an increased biomass relative to an isogenic plant that does not ectopically express the phytase polypeptide.
32. (Previously amended) The transformed plant of claim 26 or 28 wherein said plant exhibits an enhanced rate of epicotyl or hypocotyl production relative to an isogenic plant that does not ectopically express the phytase polypeptide.
33. (Previously amended) The progeny plant of claim 27 or 29 wherein said progeny plant exhibits an enhanced rate of epicotyl or hypocotyl production relative to an isogenic plant that does not ectopically express the phytase polypeptide.
- 34-36 (Canceled)
37. (Previously amended) The transformed plant of claim 26 or progeny plant of claim 27, wherein the phytase polypeptide is ectopically expressed as a fusion protein with a secretory signal peptide.
38. (Previously amended) The transformed plant or progeny plant according to claim 37, wherein the secretory signal peptide is selected from the group consisting of the carrot extensin signal peptide and the lupin acid phosphatase signal peptide.
39. (Previously amended) The transformed plant of claim 26 or progeny plant of claim 27, wherein the phytase polypeptide is from *Aspergillus niger*.
40. (Withdrawn) The transformed plant of claim 26 or progeny plant of claim 27, wherein the phytase polypeptide has an amino acid sequence having at least 93% identity to SEQ ID NO: 2.

41. (Currently amended) The transformed plant of claim 26 or progeny plant of claim 27 ~~according to claim 40~~ wherein the phytase polypeptide comprises an amino acid sequence ~~amino acids having a sequence~~ selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO: 4.
42. (Currently amended) The transformed plant of claim 26 or progeny plant of claim 27 ~~according to claim 40~~, wherein the phytase polypeptide is encoded by a nucleotide sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 3 and a degenerate nucleotide sequence thereto.
43. (Currently amended) The transformed plant of claim 26 or progeny plant of claim 27 ~~according to claim 40~~, wherein the phytase polypeptide is encoded by a nucleotide sequence contained within the plasmid assigned AGAL Accession No. NM99/06795.
44. (Withdrawn) An isolated nucleic acid molecule encoding a mature phytase polypeptide without a phytase leader sequence and comprising a nucleotide sequence selected from the group consisting of: (i) the nucleotide sequence of SEQ ID NO: 1 or 9; (ii) a nucleotide sequence encoding the amino acid sequence of SEQ ID NO: 2 or 10; and (iii) a sequence that hybridises to a phytase-encoding nucleotide sequence contained within the plasmid assigned AGAL Accession No. NM99/06795 or a complementary nucleotide sequence thereto under high stringency hybridisation conditions.
45. (Withdrawn) The isolated nucleic acid molecule of claim 44 comprising the nucleotide sequence set forth in SEQ ID NO: 1 or 9.
46. (Withdrawn) The gene construct comprising the isolated nucleic acid molecule according to any one of claims 44 or 45 placed operably in connection with a promoter sequence that is operable in the root cells of a plant.

47. (Withdrawn) The gene construct of claim 46 comprising the *PhyA-2* gene sequence set forth in SEQ ID NO: 1.
48. (Withdrawn) The gene construct of claim 46 comprising the *ext::PhyA-2* sequence set forth in SEQ ID NO: 9.
49. (Withdrawn) The gene construct according to claims 46 consisting of the plasmid assigned AGAL Accession No. NM99/06795 .
50. (Previously added) The transformed plant or progeny plant of claim 37, wherein the fusion protein comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 10 and SEQ ID NO: 12.
51. (Currently amended) The method according to claim 1, wherein the medium comprises a plant fertilizer comprising phytate.